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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/925,942	08/10/2001	Yoshio Satoh	21.1966-CRE-C	6889

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EXAMINER

SUMMONS, BARBARA

ART UNIT	PAPER NUMBER
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2817

DATE MAILED: 12/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/925,942

Applicant(s)

SATO ET AL.

Examiner

Barbara Summons

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 6/14/05 (amend.) & 7/12/05 (RCE).
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,22-33 and 35-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22-33 and 35-37 is/are allowed.
- 6) ☒ Claim(s) 1 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☒ Certified copies of the priority documents have been received in Application No. 07/965,774.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed July 12, 2005 in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 14, 2005 has been entered.

### ***Withdrawn Claim Rejections - 35 USC § 103***

2. Applicants' amendment and arguments have overcome the previous rejections of claims 24-29, 35 and 37, and therefore these rejections are withdrawn.

Regarding independent claim 25, the prior rejection and the remainder of the prior art of record do not show the amended feature "only one impedance matching circuit located only between... the second band-pass filter and the common signal terminal" as also indicated in the comments attached to the advisory action.

Regarding claims 24, 35 and 37, Applicants' arguments are convincing, especially the exhibit showing the differences between the prior art arrangement of the Ketchum/Black combination which has a common ground for the parallel resonators such that it would not have been obvious to provide the "parallel arms... being connected to ground via respective said bonding inductance elements" (emphasis added)[see claims 35 and 37, lines 5-6 and see claim 24, lines 9-10].

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claim 1 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Hikita et al. U.S. 5,115,216 in conjunction with Hikita JP 59-158117 (both of record).

Figs. 1 and 3 of Hikita JP '117 discloses a band-pass filter (Fig. 2) having a pair of common signal terminals (i.e. the antenna terminal and a ground associated therewith) and plural pairs of band-pass filter signal terminals 4/Tx and 5/Rx and the grounds associated therewith (see Fig. 3), comprising a pair of band-pass filters 2 and 3 each having respective pass bands and pairs of input/output terminals (e.g. 4 and 5 and the grounds associated therewith on the lower sides of the interdigital transducers 10/12, and similar for the antenna side of the filters).

However, Hikita JP '117 does not show the filters comprising a plurality of acoustic wave resonators connected in a multiple ladder structure or only one

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inductance element located between one of the band-pass filters and one of the common signal terminals.

Hikita U.S. '216 discloses ladder filters formed with plural surface acoustic wave (SAW) resonators in multiple ladder structure (see Figs. 1 and 4), and clearly shows the pairs of common input/output terminals (1/1' and 2/2'). Although Hikita U.S. '216 does not show a duplexer, i.e. a band pass filter having a pair of band pass filters with a pair of common signal terminals and plural transmit/receive terminal pairs, Hikita U.S. '216 does disclose its filter for use as transmitters and receivers in mobile phones (see col. 1, lines 8-16) which one of ordinary skill would have known included duplexers. Hikita U.S. '216 also clearly shows impedance matching circuits including two inductors 3-1 and 3-2. Thus, the Hikita/Hikita combination shows two inductance elements "located between one of the band pass filters... and one of the common signal terminals" (see claim 1, the last four lines thereof).

At this point the Examiner takes Official Notice that impedance matching circuits with only one inductor in the SAW filter art would have been extremely well known art recognized equivalent impedance matching circuits. Other art of record provides evidence of impedance matching circuits with only one inductor (see e.g. Fig. 1 of Yuhara et al. U.S. 4,959,487 and Fig. 7 of Wakamori U.S. 5,162,822).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the duplexer/band pass filter of Hikita JP '117 (Figs. 1 and 3) by having substituted the SAW ladder filters of Hikita U.S. '216 (Figs. 1 and 4), including the matching inductors, in place of the SAW filters 2 and 3 of

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Hikita JP '117, because such an obvious modification would have been the mere substitution of art recognized alternate SAW filters and because SAW ladder filters would have provided the benefits of less losses in the acoustic/electric conversion, better power handling, and better frequency characteristics than the transversal type filters in the JP reference as explicitly suggested by Hikita et al. U.S. '216 (see col. 1, lines 18-63).

It would have been further obvious to one of ordinary skill in the art at the time the invention was made to have modified the combination by substituting a matching element with only one inductor in place of the matching element with two inductors 3-1/3-2 between one of the band pass filters and one of the common/antenna signal terminals, or indeed replace all of the matching elements with two inductors with a matching element with only one inductor, because such an obvious modification would have been the mere substitution of art recognized equivalent matching circuits, as would have been known by one of ordinary skill in the SAW filter art, and using less inductance elements would have provided the benefit of miniaturization.

***Allowable Subject Matter***

5. Claims 22-33 and 35-37 are allowable over the prior art of record.

***Response to Arguments***

6. Whereas some of Applicants' arguments were considered persuasive (see paragraph 2 above), Applicants' arguments filed June 14, 2005 with respect to claim 1, have been fully considered but they are deemed not persuasive.

Applicants argue that because the Hikita/Hikita combination “has two matching circuits between the first stage of both the first and second SAW filters and common signal terminals... it would not have been obvious to have modified the prior art arrangement to have only one inductance element located between one of the band-pass filters and the common signal terminal” (see page 10, first full paragraph of the amendment received 6/14/05). However, this argument appears to narrowly construe the claim language. The Examiner is giving the limitation “only one inductance element located between...” its broadest possible interpretation, being that as long as there is only one inductance element at the recited location, there may be as many other inductance elements as desired in other locations. The Examiner gave an example of more particular claim language (see the comments on the advisory action) that would have the interpretation that Applicants appear to be arguing. Therefore, as the claims are currently worded, the Examiner considers the argument not persuasive since it is not commensurate with the broadest possible interpretation of the scope of the claim.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Wakamori U.S. 5,162,822 provides evidence that matching circuits having only one inductor (see Fig. 7) would have been well known in the SAW filter art.

UU JP 3-297211 discloses a branching SAW filter having two SAW band-pass filters 6 and 7 (Fig. 2) with an inductance element 5 and 5a (see also 30 in Fig. 1) connected between one of the filters 6 and the common/antenna signal terminal 1.

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barbara Summons whose telephone number is (571) 272-1771. The examiner can normally be reached on M-Th, M-Fr.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bob Pascal can be reached on (571) 271-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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December 21, 2005



**BARBARA SUMMONS  
PRIMARY EXAMINER**